Listing of Claims

This listing of claims will replace all prior versions and listings of claims in the application.

1. (currently amended) Method for regenerating from an etching system an etching solution containing iron for the use in etching or pickling copper or copper alloys, comprising:

(i) feeding the etching solution to be regenerated from the etching system into an electrolysis cell ~~being hermetically sealed or having an anode hood, the electrolysis cell~~ comprising a cathode, an inert anode, means for removing the electrolytically deposited copper from the cathode and means for collecting the removed copper and applying a potential to the removed copper, wherein the electrolysis cell does not have an ion exchange membrane or a diaphragm, ~~and~~ wherein the electrolysis cell is constructed to channel the etching solution ~~to be regenerated~~ such that the solution contacts the cathode of the electrolysis cell first, ~~and subsequently is allowed to flow to the~~ and then contacts the anode, and then exits the electrolysis cell, and wherein the electroylsis cell is a closed system which prevents gas from escaping from the solution;

(ii) electrolytically depositing the copper comprised in the etching solution at the cathode,

(iii) oxidising the Fe(II) comprised in the etching solution to Fe(III) at the anode,

(iv) removing the copper deposited at the cathode,

(v) applying a potential to the removed copper to prevent re-dissolving of the copper, and

(vi) returning the etching solution being thus treated to the etching system.

2. (currently amended) Method according to claim 1, ~~wherein~~ further comprising controlling the flow of the etching solution through the electrolysis cell and/or the current flowing through the electrolysis cell ~~is controlled~~ by use of on-line measuring of the concentration of Fe(II)/Fe(III) or the concentration of Cu.

3. (currently amended) Method according to claim 2, wherein the on-line ~~determination~~ measuring of the concentration of Cu is carried out by photometric methods or by potentiometric measurement.

4. (previously presented) Method according to claim 1, wherein the electrolysis is carried out in the electrolysis cell using direct current.

5. (previously presented) Method according to claim 1, wherein the electrolysis is carried out in the electrolysis cell using pulsed current.

6. (cancelled)

7. (currently amended) Apparatus for regenerating an etching solution containing iron for the use in etching or pickling copper or copper alloys ~~carrying out the method according to claim 1,~~ comprising:

(i) a separate electrolysis cell ~~being hermetically sealed or having an anode hood (8), the electrolysis cell having~~ comprising a cathode ~~(1)~~ and an inert anode ~~(2)~~, means ~~(3)~~ for removing the electrolytically deposited copper from the cathode, means ~~(4)~~ for collecting the removed copper and for applying a potential to the removed copper, wherein the electroylsis cell is a closed system which prevents gas from escaping the solution,

(ii) an inlet ~~(5)~~ in the lower region of the electrolysis cell between the cathode ~~(1)~~ and the means ~~(4)~~ for collecting the removed copper, and ~~applying a potential to the removed copper and~~

(iii) an outlet ~~(6)~~,

wherein the electolysis cell is constructed such that the solution contacts the cathode first and then contacts the anode, and then exits the electrolysis cell, and wherein the electrolysis cell does not have an ion exchange membrane or a diaphragm.

8. (currently amended) Apparatus according to claim 7, further having valves ~~(7)~~ for discharging the removed copper.

9. (currently amended) Apparatus according to claim 7, wherein the cathode ~~(1)~~ is in the form of a rotating cathode and the means ~~(3)~~ is in the form of a stripping plate.

10. (previously presented) System for etching or pickling of work pieces comprising an apparatus according to claim 7.

11. (new) Apparatus according to claim 7 further comprising an over-pressure valve.